MARINE REVIEW.

VOL. III. CLEVELAND, OHIO, THURSDAY, JUNE 11, 1891. No. 24.

Sault Canal Traffic for May.

The total tonnage of the Sault Ste. Marie canal for May was 994,225 and the passengers numbered 1,542. During the month 831 steamers, 266 schooners and barges and 61 rafts and unregistered craft passed through the canal. Their total registered tonnage was 854,351. The total of passages was 1,158 and the number of lockages 586. The lock was operated 428 hours and 35 minntes, and the aggregate time consumed by boats in passage was 734 hours. The decrease in traffic for the month, as compared with the corresponding month of 1890, was in passages, 485; registered tonnage, 499,327; freight tonnage, 299,471; passengers, 111. The freight tonnage was divided as follows:

	East-bound.	West-bound.
Coal		404,698 tons.
Flour	640,239 bbls.	
Grain		3,000 bu.
Corn	164,861 bu.	
Wheat	4,733,758 bu.	
Building stone	7,685 tons.	
Copper	7,852 tons.	
Manufactured iron		4,751 tons.
Iron, ore	215,055 tons.	
Iron, pig	840 tons.	
Salt		50,370 tons.
Lumber	46,829,000 feet.	
Silver ore	341 tons.	
Unclassified freight	10,078 tons.	46,148 tons.

The number of eastbound passengers was 428 and the westbound 1,114.

The Lakes and the Hudson.

Hudson river interests are endeavoring to secure from the general government appropriations for deepening the upper 30 miles of the river, so that seagoing vessels of 3,000 tons, drawing 20 feet can have free access to Albany and Troy, the eastern terminus of the Erie canal. In support of their efforts the shippers and vessel owners of the Hudson point to immense growth of lake commerce brought on by improvements. The Engineering Record of New York says in discussing the matter: "The general government of this country has appropriated $207,000,000, in round numbers, for river and harbor improvements up to this time; a small part of this sum, however has been returned into the treasury. All have heard this expenditure denounced as unwise, or worse, and but few have compared the above-mentioned total expenditure with the freight rates on the 15,500,000,000 ton miles which the census bureau returned as the freight movement on the great lakes. Gen. Poe ascertained that the tonnage passing through the lock at the foot of Lake Superior, in 1889, was transported at an average charge of 1½ mills per ton mile, and that, as compared with charges by the railroads of the country, there was an economy to the forwarders of water-borne freight by that route of $46,466,011. At this rate, and the ton-mileage ascertained by the census bureau, the saving on the commerce of the lakes for the census year was $119,801,734. This returned a dividend, in direct saving in freight charges, of between 57 and 58 per cent on the total appropriations made for river and harbor improvements."

The demands of the Hudson river interests for the improvement are in line with a great project that is now being considered by leaders in legislative matters on the lakes and in the northwest. The Sault canal record for 1890 shows a still further reduction in the cost per ton mile of carrying freight on the lakes, this time to 1.3 mills and, on the basis of the great benefits derived from the improvement of inland waterways, the vessel and shipping interests of the lakes are about to make a bold movement that may be an agreeable surprise to the state of New York. Its detail has not yet been considered but it is enough to say that the work of improvements in connection with the lakes is only half done. With the completion of the new lock at the Sault, four or five years hence, the lakes will have practically, a 20-foot channel, as congress will readily grant the amount necessary to deepen the St. Clair river in accordance with the canal draft. Then it may be expected that the commerce of these waterways will find a passage to New York harbor.

Lake Coal Matters.

H. D. Turney, who was vice-president and general manager of the Columbus and Hocking Coal and Iron Company up to about a year ago when he sold his interest in that concern, has secured a lease of the Milwaukee, Lake Shore & Western Railway docks at Ashland, the lease of the docks by the Columbus and Hocking company expiring Jan. 1, 1892. J. S. Jones, who has been associated with Mr. Turney and the Hocking company in the management of the Lake Shore business at Ashland, joins Mr. Turney in the formation of a new company, to be known as H. D. Turney & Co. Mr. Turney shipped coal over the Ashland docks last season, but it is understood that the operations of the new company will be enlarged and extensive dock improvements will be made.

In carrying less than 2,000,000 tons of Pennsylvania's product of bituminous coal from Lake Erie ports to the northwest last season a great many vessels and dock laborers found employment on the lakes but this was only a small portion of the product. A recently published census bulletin shows that the output of the bituminous regions in Pennsylvania in 1889 amounted to 36,174,089 short tons, or nearly double the amount reported by the last census. The total value of the output is given as $27,953,215, or an average of 77.2c. per short ton at the mines, against $18,567,129 in 1880, or an average of 100.8c. per ton at the mines. The average number of persons employed in 1889 was 53,780, against 33,248 for 1880, the amount paid for wages in 1889 being $21,142,051, against $10,863,583 for 1880. The amount of coal manufactured into coke during the year 1889 was 10,190,588 short tons, or 28 17 per cent. of the total production.

Buffalo's shipments of anthracite coal last week exceeded 100,000 tons and the movement is still very heavy.

Mining Engineers.

The fifty-ninth meeting of the American Institute of Mining Engineers was held in Cleveland last week. The attendance was not as large as had been expected, but the meeting was successful in every way and the guests of the Cleveland engineers were highly entertained. Two or three papers on subjects that might have been of special importance to interests closely connected with the lakes, such as The Magnetic Separation of Iron Ores and Bituminous Coal Mining were not read at the meeting, although they had been expected. Mr. Alex. Brown, the inventor of the great variety of machinery manufactured by the Brown Hoisting and Conveying Machine Company of Cleveland, spoke of the wonderful advancement during the past few years in the methods of handling iron ore at lake ports.

The Freight Situation.

The turning point has been reached in the lake trade. A most active season is assured from this time on, and it is more than probable that any of the ore dealers who may have sold ore at the very low prices of the past few weeks without providing for the lake freight will find small margins on such sales. The middle of June is at hand with the ore movement fully 1,500,000 tons short of that of a year ago and labor matters in such shape that it will yet be several days before boats are unloaded at Lake Erie ports with the usual regularity, if negotiations for the settlement of the strike now pending are successful. The fall movement of grain will undoubtedly be very heavy, as all preparations are being made with a view to handling the biggest crop the northwest has ever seen, and coal shippers admit that it will be necessary to continue throughout the season the present heavy movement of coal.

The work of making contracts for delivery of ore during the season is about at an end and it is doubtful now if any more ore could be covered at the season rates that have prevailed during the past three weeks. The wild rates are 90 cents from Ashland, 80 cents from Marquette and 55 cents from Escanaba. Two boats, the Sheriffs and the Gawn, were chartered a few days ago for ore from Ashland at 80 cents, but this was an extreme case where the boats were caught in port without loads. The Northern Steamship Company, it has been learned, has some ore to be taken from Two Harbors to Buffalo. Coal rates are strong and unchanged. Duluth shippers are endeavoring to move some grain and are offering 1¾ cents, an advance of ½ cent.

The Detroit Supervising Inspector.

The matter of appointing a successor to Supervising Inspector Cook, who died at Detroit recently, is demanding a great deal of attention from vessel owners. There are several applicants for the position, among them C. H. Westcott and Thomas Daly of Detroit, Stewart H. Moore, Edgar M. Doolittle, W. Guthrie and Ira Harris of Chicago, and John T. Leach of Fort Wayne, Ind. The Cleveland Vessel Owner's Associotion with other lake organizations have petitioned the president and Secretary Foster to have a vessel master appointed to the position and several of the United States senators from the different lake states have been requested to use their influence in the same direction. The aim is to have the board of supervising inspectors made up of an equal number of sailor-men and engineers. The position is worth $3,000 a year. Chicago interests ars again making an effort to have the office moved to that city. Gen. Dumont will look after the affairs of the Detroit office, pending the appointment of a successor to Mr. Cook.

The Northern Pacific and the Barge Company.

Henry Villard and other leaders in the affairs of the Northern Pacific Railway are associated with John D. Rockefeller, Colgate Hoyt, Charles L. Colby and the capitalists who have invested a great deal of money in the construction of the McDou gall barges at West Superior, and it is evident that one great aim of the barge company is to establish close relations with the Northern Pacific. Capt. McDougall's trips to the Pacifie coast were evidently with that end in view. Lake vessel owners have often wondered why the Northern Pacific has not had a lake line as well as a line on the Pacific running between China and Japan. Stockholders of the barge company now say that it is only a matter of a short time until the big railway company will have steamboats on both the Pacific and the lakes built by the barge company.

The steam whaleback A. D. Thomson, launched at West Superior Saturday, is the thirteenth barge now afloat. She has triple expansion engines built in England and it is in almost every respect a duplicate of the Charles W. Wetmore, which has just left the head of Lake Superior for the Atlantic. The Wetmore will go direct to England with wheat. Her cargo of 70,000 or 80,000 bushels will be increased to about 100.000 bushels after the boat takes it on a second time at Montreal, it being necessary to go down the St Lawrence rapids light. The Wetmore will probably go down the rapids in company with the Colby and her tow barge, as the latter is now delayed at Kingston for repairs to her boiler. The Colby and tow will engage in the Atlantic coast trade for the present and may be sent around the horn to the Pacific in the fall. These barges are 265 feet long, 38 feet beam and 24 feet deep, and their dimensions are of interest, as they show the largest boat that can reach the Atlantic from the lakes by going through the locks of the Welland and running the rapids of the St. Lawrence.

Largest Carrier on the Lakes.

The supplement accompanying this issue of the MARINE REVIEW is a very good illustration of the steel steamship E. C. Pope, built by the Detroit Dry Dock Company and owned by the Dry Dock Navigation Company, of which Capt. J. W. Millen, of Detroit, is general manager. The boat has been described in the REVIEW. She has just delivered 3,070 net tons from Lake Superior on 14 feet 1 inch draft, and is without doubt the largest carrier on fresh water. On 16 feet draft this boat will carry 3,800 net tons. The Pope is 337 feet over all, 42 feet beam and 24 feet hold and has all the equipments of the modern lake ore carrier, including Providence windlasses.

Sixth Menominee Boat—The Roman.

The sixth steel steamship for the Menominee Transit Company was put into the water at the yard of the Globe Iron Works Company, Tuesday. Her dimensions 296½, 312½, 40 and 24½ feet, and her engines are the same as her sister ships. Ex-Senator Payne and other prominent gentlemen were present at the launch. A gentleman who witnessed the launch from the Virginia said, as he looked back at the Atlanta lying astern, that Cleveland owed a big debt to the man, or men, who made this city the largest shipbuilding port on the lakes. The pessimist was there and commiserated with every one he could reach on the probability of this being the last launch they would see for some time. He was disappointed when he learned that the keel for two government boats would go down shortly on the Virginia's berth and that a good sized steel steam yacht would also be put on during the summer. Miss Lottie Johnson officiated in the naming ceremony.

The E. M. B. A. Loses Two Members.

The Excelsior Marine Bonevolent Association, order of lake captains, has lost two more of its members, vessel masters who were well and faborably known on the lakes. Capt. I. H. Andrews was a member of the Cleveland lodge and Capt. Thomas Collins was among the pioneers in the Buffalo organization. Capt. Andrews, who sailed the schooner Negaunee of the Bradley fleet, was found dead aboard his boat in Duluth, Monday morning. He had been subject to heart disease. Capt. Andrews was thirty-four years of age and was a son of Capt. Henry Andrews, who controls and sails the schooner Nellie Redington.

Capt. Thomas Collins, Buffalo vessel agent who died Friday, of heart disease, was born at Oswego in 1832, and had sailed the lakes for more than twenty years before beginning brokerage business in 1869. He commanded the brigs Mechanic and Commerce and the schooners Contest, John Sweeney and American Union among other vessels.

The Detroit & Cleveland Steam Navigation Company has begun its regular excursion business to Put-in-Bay. The boat, the City of Detroit No. 1, leaves at 8.30 a. m., giving four hours at the island.

The MARINE REVIEW and the MARINE ENGINEER, London, one year for $4. Write the MARINE REVIEW.

CHICAGO LAKE INTERESTS.

WESTERN OFFICE, MARINE REVIEW,
No. 210 So. Water Street, CHICAGO, Ill., June 11.

A movement is on foot to take city officials, the city council, editors and the United States engineer on such an excursion as they never had. It is proposed to give them a ride on one of the big lake steamers, carrying 90,000 to 100,000 bushels of corn up the south branch and back again. The purpose of this unique trip is to show them just what difficulties marine interests are compelled to struggle against in trying to do work on the river. Of course, Canal street bridge will be one of the main points of interest. It is believed that the educational results of the trip will be far reaching, particularly as the government control of the river is destined to be a most important question in Chicago for a year or more. Vesselmen consider that if their objections to obstructions were once understood and made plain much better headway could be made in the way of remedy. It is designed that the tour shall be of as much profit to the city officials as to marine interests.

Lake freights brightened up some on Monday. Under ordinary circumstances vesselmen would look for an advance in rates under a demand that took 700,000 bushels of room in a single day, but the supply of tonnage is so great that it seems a hopeless task to get rates off the bottom. But receipts of grain are falling off, and the demand can not be long continued.

It is no very serious thing for the Chicago Ship Building Company to shut down, but when the other lake shipyards are forced to there will be unhappy times among shipwrights. That period can not be far away, with lake freights as they are now.

The sinking of the Fayette Brown by the Northern Queen has renewed the discussion here as to collision liability insurance. Some denounce such insurance as an incentive to reckless navigation, but I cannot see it that way. One thing is certain—collision liability is one of the most serious dangers to vessel property on the lakes There should be no moral objection to an owner protecting himself against this risk, the same as he does against other marine risks. Collision liability insurance, however, is on the lakes to stay, and the sinking of the Fayette Brown will but extend it, regardless of moral objections.

Canal street bridge is again taking up some space in the press here. The Sunday Inter-Ocean had a two-column article, telling all about vessel jams, etc. Some "pioneer mariner" was interviewed on the subject of river obstructions, and as usual, the article was made a positive detriment to marine interests. This "pioneer" wanted bridges seven or eight blocks apart,the streets intervening having tunnels under the river. This was good enough in pioneer times, but it is bad talk now. The people of Chicago are going to have bridges across the river, and they are going to have as many as they want. They are going to get across the river where and when they take a serious notion. No vesselman, who is of the present and not a "pioneer," is going to oppose them. The complaint is in the construction of bridges in such a way as to unreasonably obstruct navigation. This fighting bridges is a hopeless contest. But the efforts to prevent the unreasonable obstruction of the river by bridges is a matter that the marine interests can successfully combat. The great mass of the people here, as elsewhere in America, are reasonable and just when they understand all the facts. But when vesselmen tell them they cannot bridge the river where they want to, they pay not the slightest attention to the kick. It is full time the marine inierests here realized that they are the under dog on this bridge question, and that they must convince with facts and conciliate the people of Chicago, and not continue growling and croaking. This is plain English, but it is a fair statestatement of the situation here.

The schooners Lizzie A. Law and Sunrise are still bleaching in the summer sun. It is said they will receive greater damage doing nothing than they could have lost in commission. The better way seems to be the course pursued with the schooners Charles Foster, M. W. Page, and two or three more. After being unloaded one man was kept on board of each of them, and their agents took their time to find a load near where they lay. They were in port two or three weeks. The other day they were chartered for grain. They will make a round trip, and lie here a while. This keeps them from drying out, and is good in several ways.

The smaller lumber carriers are still in a bad way for freights. It is said, however, that the schooners have the best of the steambarges by a large majority. The sail craft run along at the least expense possible, while the steamers have little chance to practice economy.

It has been a fortnight of damages in Chicago river. The loss to the tug companies will make a most respectable figure when added together. All the lines have been in it, and the mishaps appear in most cases to have been unavoidable. Towing at 50 cents on the dollar and paying big damage bills on top of it have not tended to increase the natural stock of good nature tug men carry.

The propeller lines are taking steps to secure dock facilities at the World's Fair. There is certainly a vast amount of freight to come to the fair from the east, and lake and rail lines will get their share of it, if they can handle the traffic as well as the all-rail lines. If given docks at Jackson Park they would be at a great advantage over the railroads, in saving the Illinois Central's switching charges. All the propellers have to do, I am told, to get terminal facilities at the fair is to wake up and push their claims for recognition before it is too late. If the matter is put off too long too many plans will have to be changed for the proper dock facilities to be given. A World's Fair director suggests that the coal for the fair machinery might be unloaded directly on the grounds from steamers. But it will be in general freight for construction and for exhibition that the lake lines will be at the best advantage with dock facilities.

Canadians Admire the Whales—Load Line Act.

Special Correspondence to the MARINE REVIEW.

KINGSTON, Ont., June 11.—The whalebacks Colby and her consort, the latter with 77,000 and the former with 67,000 bushels of wheat, reached here Saturday night with cargoes in good condition. The consort's cargo is the largest that ever came here. Capt. A. McDougall, the inventor of these boats, is with them. There is a difficulty between him and the crew, as to the number of working hours in a day's work, and the probabilities are, unless the matter can be settled the men will refuse to go to the Atlantic, and return west as soon as possible. The Colby made 8 miles an hour down with only one boiler going. The whalebacks are thought favorably of here. They would do well for river work. If the Montreal Transportation Company gets the barracks from the government it would be no surprise to see this class of boats built here. The Colby's consort is just two inches shorter than the Welland canal locks.

The enforcing of Mr. Plimsol's load line act in England, has caused much inconvenience to Canadian vessels touching at British ports outside of Canada. There is no such act in force in this country, but the probabilities are that one will be enacted in a few years, as marine legislation has been very progressive of late. At the last sitting of the house of commons a member from British Columbia referred to the inconvenience alluded to and requested the minister of marine to communicate with the imperial government with a view to getting Canadian vessels exempted from complying with the load line act, inasmuch as they were not built to comply with its provisions. New vessels could be constructed to meet the demands, but it would be a hardship to compel old craft to comply. The minister replied that he had already communicated with the imperial government regarding the matter and that he had no doubt that the enforcing of the act with regard to Canadian bottoms would be withheld for three years at least. By the end of that time Canadian owners would be in a position to observe the load line act, and no doubt the demand for such a law here would be responded to by the government. The new inspection acts, alluded to in a former letter, are working satisfactorily.

The city is in mourning because of Sir John Macdonald's death, and the union jacks and stars and stripes are flying in uniting folds on the different American and Canadian boats in the harbor. The funeral will be here and all the prominent mariners in the country will attend. A representative of that interest will be pallbearer, as the dead premier always paid close attention to trade and navigation. Many steamers, tugs and sailing yachts are named after him. The funeral takes place, Thursday.

Capt. D. McLeod, of Buffalo, has kindly sent a register of American and Canadian inland shipping to Capt. Thomas Donnelly. The gift is very much appreciated. The propeller Myles is now in the dock at Port Dalhousie getting general repairs and a new wheel. The buoys in the harbor are being painted red. The steamer Algonquin's last cargo, 73,000 bushels, was the largest received here prior to the arrival of the whalebacks. Owing to the cold weather little or nothing has been done by the passenger steamers. It looks as if the excursion business will not begin until near the first of July.

Official Numbers and Tonnage.

The following official numbers were assigned lake vessels by the Bureau of Navigation, W. W. Bates, commissioner, during the week ending June 6: Steam—O. O. Carpenter, Port Huron, tonnage, gross 364.07, net 268.28, No. 155,198; Virginia, Milwaukee, tonnage, gross 1,606.66, net 979.68, No. 161,654. Unrigged—Ben Brink, Marquette, tonnage, gross and net 317.79, No. 31,541.

A novel method of finding leaks in ships when in dry dock is reported from England. A machine, consisting of a hollow cylinder about 4 feet in length and 2 feet in diameter, is brought into play. It is open at one end, and has a door in the side, which shuts perfectly close. The cylinder is filled with damp hay or straw, which when ignited creates a thick smoke. By means of an air pump the smoke is forced through every part of the ship, the deck of which has been previously made as nearly as possible air-tight. If there are any leaks anywhere the smoke finds its way through, and the spot is marked with chalk or white paint.

Canadian Discrimination Against American Marine and American Ports—How Sir John's Constituency Figures in it.

At this time when the Canadian government is apparently seeking for more liberal trade relations with the United States and a powerful minority party is in favor of unrestricted reciprocity, it is well to consider whether the course being pursued by the Canadian government is such as will most surely tend to bring about the relations desired, and also prove its sincerity in the overtures being made to the United States. There is perhaps no better illustration of the reciprocal manner in which the Canadian government treats American interests than is shown by the treatment accorded to the shipping interests of each country while using the national canals of the other.

To illustrate: American vessels passing through the Welland canal, connecting Lakes Erie and Ontario, are obliged to pay tolls to the Canadian government amounting to 20 cents per ton on most classes of traffic and also a tonnage toll on the vessel itself of 1½ cents per ton on the vessel's registered tonnage. On the other hand, Canadian vessels are allowed to use the United States' St. Mary's canal, connecting the waters of Lakes Superior and Huron, without payment of tolls of any character, either on cargo or vessel; in fact St. Mary's canal is made absolutely free to the Canadian marine. Surely here is an opportunity for Canada to prove her sincerity and desire for reciprocity by according to American vessels and cargoes passing through her Welland canal, the same treatment precisely that Canadian vessels receive from the United States government when using its national canals. For some years past it has been the policy of the Canadian government to issue an order in council each spring before the opening of lake navigation, granting a rebate of 18 cents per ton of the tolls on grain passing through the Welland canal, provided the grain goes through to Montreal. As the larger class of boats engaged in carrying grain from the upper lake ports are unable to pass through the St. Lawrence river canals, it has been necessary to transfer their grain cargoes destined for Montreal to lighter-draft canal barges. This transfer, up to the season of 1890, was made at Kingston through floating elevators, owned and operated by Canadians. The large number of vessels going to Kingston with Montreal grain for transfer purchase supplies of various kinds from the Kingston tradesmen and this with other advantages has made the citizens of Kingston anxious to retain the exclusive control of the grain transfer business for Montreal.

During the season of 1890, another route for this Montreal traffic was opened up, viz: by way of Ogdensburg, N. Y., and during that season considerable grain for Montreal was transferred from lake vessels to canal barges at that port, and it was found that the American port was likely to prove a strong competitor to Kingston for the transfer business, on account of its better elevator facilities for transferring and storing grain, and also on account of its being about 70 miles nearer to Montreal than Kingston. There are several lines of American ships running between Ogdensburg and the upper lakes and these boats found it for their interest to engage to some extent in transporting grain for Montrreal. The Kingston people seeing this business likely to drift away from them, made strong protests to the Ottawa government against allowing the usual rebate of 18 cents per ton on Montreal grain when transferred at Ogdensburg, claiming that the rebate ought only to be paid on grain transferred at a Canadian port and not when transferred at an American port. The Ottawa government therefore declined to pay the rebate on grain transferred at American ports and took the matter under consideration, with the result that no decision was made until about the close of navigation for the season, when it was decided that the rebate must be paid on grain transferred at Ogdensburg, same as though transferred at a Canadian port; in fact, no other decision was possible, as the order in council of 1890 granting the rebate made no mention of port of transfer and therefore under it no discrimination against American ports was possible. The effect, however, of the government refusing to refund the tolls and withholding its decision until the close of navigation was to nearly stop the transfer of grain at Ogdensburg, as grain shippers did not care to assume the risk of an unfavorable decision of the government.

During the recent Canadian election, Sir John McDonald stood for the Kingston district and one of the principal issues made was the question of transferring Montreal grain at an American port, the Kingston electors demanding that in return for their giving Sir John a majority of their votes he must give them the assurance that if returned to power he would have the order in council for 1891 so framed as to prevent the refund of canal tolls on grain for Montreal when transferred at an American port, and it was understood that if reelected the demands of Kingston would be acceded to. Sir John was again returned to power and on March 25 an order in council was issued granting the usual rebate of 18 cents a ton of canal tolls on grain for Montreal during the season of 1891. The conditions of this rebate as stated in the order are as follows:

First. The products aforesaid on which the refund may be claimed shall be shown to have been originally shipped for Montreal or some port east of Montreal before entering the Welland canal.

Second. Shall be shown to have been actually carried to Montreal or some port east of Montreal.

Third. Transhipment, if at a Canadian intermediate port, shall not prevent the refund aforesaid being made.

The grain shippers generally interpreted the last clause of this order to mean that the rebate would not be paid on grain transferred at an American port, and the order was doubtless intentionally so framed as to convey this impression, in the belief that the effect of the order would be to prevent shipments of Montreal grain for transfer at Ogdensburg; and if trial shipments should be made, the rebate would doubtless be refused, the matter taken under consideration and decision reserved until after the close of navigation for the season, or at least until after the Canadian commissioners should have made their visit to Washington in October next in search of reciprocity. As a matter of fact, shipments have been made and grain transferred at an American port this season and on arrival at Montreal the refund of 18 cents a ton has been declined and the matter taken under consideration by the government at Ottawa. It is to be hoped that when the conference between the Canadian commissioners and our government is held at Washington in October next, that the president and Secretary Blaine will demand,

First. That American vessels and cargoes be allowed to use Canadian canals on precisely the same terms as are accorded to Canadian vessels in the United States canals.

Second. That American ports, vessels and consumers shall not be discriminated against as is now done by rebating 18 cents a ton canal tolls on traffic for Montreal and not on traffic brought to American ports by American vessels and for American consumption.

Third. That American ports shall not be discriminated against by payment of refund on Montreal grain when transferred at Canadian ports with no rebate when transferred at American ports.

The entire grain produing west and the grain consuming east, as well as the enormous marine interests of the lakes are all deeply interested in these matters, which should be thoroughly understood in order to fully appreciate the course Canada is pursuing. It would be well if the boards of trade or other representative bodies of the principal lake cities would either by petition or delegation communicate with the government at Washington, to the end that the importance of these matters to American interests may be fully understood and considered before the visit of Canadian commissioners to Washington in October next, and, if this is done, it is reasonable to suppose that this condition of affairs which now imposes a tax of several hundred thousand dollars per annum on American shipping and consumers will be given the importance to which it is entitled. The liberal party in Canada seems to have some ground for claiming that the overtures being made by the party now in power in the direction of more liberal trade relations are insincere and made for home effect only.

In General.

The El Sol, Morgan Line freight boat designed by Horace See, N.A.. of New York, recently made another fast trip to New Orleans. She made the run from New York to New Orleans, a distance equal to 2,015 land miles, in 4 days, 20 hours and 41 minutes, or at the rate of 17½ miles an hour.

The rumors of precarious financial conditions surrounding the Chignecto ship-railway, the great undertaking upon the success of which many similar projects depend, is denied by Canadian newspapers. It is said that work on the ship-railway during the past few months has progressed as rapidly as the weather would permit.

The advantage of the triple expansion over the compound engine is generally admitted, and engineers are complaining that shipowners are blind to their own interests in declining to adopt the quadruple engine. Mr. Richardson, president of the North Coast Institute of Engineers and Shipbuilders, says that there is no doubt that great economy must follow the adoption of four cylinders, and they will come into use as soon as they can be arranged without undue complication, with ready accessibility of parts, and without any great increase of weight or space.—Foreign Exchange.

Some months ago Brother W. E. Elliott, chief engineer of the Goodrich Transportation Company, of Milwaukee, sent us two photographs of the saloons of the City of Racine, a vessel in the line mentioned. These photographs hang in our office, and have attracted universal admiration. Most of our visitors take them to be views of some of our crack sound steamers costing a million dollars or so, and can hardly believe that a small lake vessel could be so beautifully fitted up. Whoever the designer of the cabins of the City of Racine was, he or they can have the pleasure of knowing that they are appreciated here, where we think we have some pretty fine saloons.—The Engineer, New York.

Although the protected cruiser No. 13, for which bids were opened by the navy department on the 1st inst., is to be an exact duplicate of cruiser No. 12 now being built by the Cramps, so that all the patterns would be available in the second boat, the big Philadelphia concern was not the lowest bidder. The bids were: Bath Iron Works, of Bath, Me., $2 690,000; Cramp & Son, $2,745,000; Union Iron Works, of San Francisco, $2,793,000. This vessel and its sister-ship, cruiser No. 12, are designed for the fastest cruisers in the navy—vessels that can overhaul and sink any merchant vessel now afloat and at the same time cope with any unarmored cruiser afloat as yet designed. They are unique in many respects, especially in their machinery, being the first of their size to which three screws have been applied.

Mr. Charles H. Cramp is authority for the statement that it is entirely out of the question for an American shipbuilder to duplicate exactly a British ship or to follow out British specifications and plans, because American vessels are in advance, and there is no comparison when the outfit of the vessel is considered. Another point he makes is the fact that when foreign shipbuilders are asked to duplicate an American ship, or build entirely on American plans or methods, they always ask as much as American builders. This has been confirmed by evidence furnished by Mr. Cramp, and the whole summing up means that a contract for an inferior vessel will not be undertaken here on competitive terms, but that our shipbuilders stand ready to duplicate first-class steamers at the same cost of construction as abroad.—Marine Journal.

Ocean steamers of the commercial class are built in England by the ton. The present price, which is lower than for some time past, is about $35.00 per ton for steamers of 1,000 to 3,000 tons register; for larger ships the price is usually less. This makes $35,000 for a 1,000 ton ship or $70,000 for a 2,000 ton ship, and seems a low price, but it is an "organized manufacture" continually being cheapened by new implements and improvements of one kind or other. Nearly all continental countries have tried their hands at building commercial steamers, in Germany and France for exampe, but it is a stern chase, because by the time they catch up to the practice of a period, the art has been forced ahead to a new standard in England, and it seems probable that "trade" shipbuilding will become more and more centralized there so long as material is left at its natural cost in that country.—Industries, San Francisco.

Iron Mining.

VALUE OF LEADING STOCKS.

Quoted by Chas. H. Potter & Co., No. 104 Superior St.

Stocks.	Par Value.	Bid.	Asked.
Cleveland-Cliffs Iron Company.....	$100 00	$.....	$ 85 00
Champion Iron Company.....	25 00	.....	.....
Chandler Iron Company.....	25 00	37 00	39 00
Chicago and Minnesota Ore Company.....	100 00	.....	100 00
Jackson Iron Company.....	25 00	90 00	100 00
Lake Superior Iron Company.....	25 00	.....	53 50
Minnesota Iron Company.....	100 00	70 00	72 00
Pittsburg Lake Angeline Iron Co.....	25 00	.....	141 00
Republic Iron Company.....	25 00	26 50	27 50
Michigamme.....	25 00	.....	5 00

The mines of the Crystal Falls district, Menominee range, are still being worked in a manner that would indicate a repetition of last season's output. Such mines as the Dunn, Mastodon, Mansfield and others are making up for the loss through the suspension of operations on the smaller properties. The group of mines in this district is shipping about 500 tons a day by all rail. The Mansfield, Bessemer producer, is said to have sold its entire product. At the Dunn about 160 men are employed and the daily output is from 800 to 1,000 tons of ore, much of which is being mined from an open pit where stripping was done during the winter. The stock-piles which still aggregate fully 40,000 tons, are practically untouched. The Mastodon has sold about 30,000 tons. About 200 tons a day is being mined, and about 14,000 is yet in stock. The Paint River has a few thousand tons in stock and is mining 300 tons a day. The managers of the Monitor figure on an output of 75,000 tons for the mine this season. The stock pile of the Iron River mine at Stambaugh is being removed to Escanaba for shipment but the mine is still closed with no indication of operations being resumed. The Iron river was among the leading shippers of the Menomine range last season.

Activity at the mines of the Penokee and Gogebic Development Company is among reports of importance from the Gogebic range, where the Colby alone had accumulated a stock pile of about 100,000 tons. The Aurora, Palms and other mines have also begun big shipments. Section thirty-three has 30,000 tons in stock pile but is working only about 100 men. The Montreal has 25,000 tons in stock but is giving employment to but about 200 men, although 400 might be placed at work if the ore was wanted. Operations are being carried on at this mine in two shafts 800 feet apart but one of them is greatly troubled with water. The Norrie is placing a Worthington compound duplex pnmp in shaft No. 6 at a distance of 650 feet from the surface. The pump is capable of raising 500 gallons of water a minute to a height of 1,000 feet.

Bulletin No. 68 is the latest report from the census office relating to minerals. It treats of the production of manganese and was prepared by Joseph D. Weeks. It shows the production of manganese of the entire United States during 1889 to be 23,927 long tons, with a total value of $238,939. This product is principally from the localities of Crimora (Virginia), Cartersville (Georgia) and Batesville (Arkansas), these districts having yielded 20,325 long tons. The ores are treated under three general classes, namely, manganese ores, manganiferous iron ores, and argentiferous manganese ores, and valuable information and statistics concerning each class are given.

We are indebted to the Kniffler Manufacturing Company of Cleveland, operating analytical laboratories at Crystal Falls and Negaunee, Mich., for a blue print of a map of the Crystal Falls iron district. The map is on a scale of an inch to the mile and is complete in detail. It was prepared by J. Kellerschon. The shipping mines of this district are the Dunn, Great Western, Mastodon, Paint River, Shafer, Youngstown, Armenia, Monitor, Mansfield, Manganate, Crystal Falls, Hollister and South Mastodon, some of which are among the leading Lake Superior properties.

Another survey for a railway from Lake Superior to the Mesaba range is being made. This time the line is being run from Sucker bay, a point about 8 miles down the lake from Two Harbors. C. B. Hillhouse, who controls large tracts of land in the vicinity of the new iron range, is said to be interested in this latest survey for a road.

The Buffalo company has shipped some ore to Birmingham, Ala., where it is used as fix. The freight is a little over $4 a ton.

MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

JOHN M. MULROONEY, ... } PROPRIETORS.
F. M. BARTON, ... }

HOMER J. CARR, - - - Associate Editor and Manager Chicago Office, 210 South Water Street.

Published every Thursday at No. 510 Perry-Payne Building, Cleveland, O.
SUBSCRIPTION—$2.00 per year in advance. Advertising rates on application.

Entered at Cleveland Post Office as Second-class Mail Matter.

THE rail freight today on a ton of ore from the mines of Michigan to Escanaba, the Lake Michigan shipping port, a distance of 50 or 60 miles, is greater than the lake freight on the same quantity of ore to Lake Erie ports, a distance of about 600 miles. When the ore producer complains that this rail charge is excessive and should be reduced, on account of the depressed condition of the market for his product,the railway manager tells him to wait until he can find a market at a profit. The ore is in the mine and will be taken out some day, according to the railway argument. The makers of pig iron in the Mahoning and Chenango valleys complain that they cannot find a profitable marker for their iron,on account of the excesssve railway charges, and they also are told to wait. This is railway policy. What argument more than this is needed for the improvement of the inland waterways of the country?

IN another part of this issue will be found an article dealing with the matter of discrimination in the treatment of American vessels and cargoes passing through the Welland canal, as compared with the treatment accorded Canadian vessels and cargoes passing through the United States canal at Sault Ste Marie, Mich. The article also treats of the discrimination against grain destined for American consumption as against grain going to Montreal for export and for Montreal consumption. In October next a Canadian commission to deal with reciprocity matters will visit Washington. This discrimination, brought about through Welland canal management, should be forcibly presented to our own government in advance of any dealings with the commission. It is a matter that interests grain producers and grain consumers as well as the vessel owners on the lakes.

THE season starts out with some heavy losses for the insurance companies in addition to the very low margin at which business was taken in the spring. A repetition of the season of 1883, when the losses of the underwriters on the lakes were enormous, would be a big draw-back to the companies that have been grasping so earnestly for hull risks. The season is bound to be a late one.

An English "Enterprise."

John D. Grant Fairfax the Englishman, who has already visited Chicago and other lake cities of late, and who has talked a great deal about his plans for a company to run a line of steamships from the lakes to European ports, has been the subject of a great deal of sarcasm from the lake papers, but his chances of getting a promotor's fee out of the underwriting of such a company are far better than those of his predecessors. Fairfax, who has consulted a number of vessel owners and shippers around the lakes, has no English connections and claims to be possesed of sufficient means to spend a couple of years on this work, awaiting the improvement of the St. Lawrence river canals to Welland canal dimensions. If capitalists are to be gulled by his scheme, they will not be Americans. His aim is to make the company distinctively English, hoping to secure support on that account. The Great Western Railway and the Cardiff Dock Trust, foreign concerns of which he speaks, have furnished him plans for a type of Welland canal steamer, exhibited by him here, and pronounced by experts as fitted for the class of traffic in which it is proposed to have them engage. It is also said that this class of boat will withstand ocean navigation. The question of profit in a boat that must of necessity be small is, however, another matter, but it is in the building of boats in England and in the English character to be given the company that the promoter rests his hope of floating the scheme. He can probably take over without trouble a great many contracts for the transportation of dressed beef and other freight at low prices, but like a great many others of his class he need care little about the outcome of the company once formed.

Clear the Breakwater Entrance.

Deep laden ore carriers coming to Cleveland during the past few weeks have had occasion to seek anchorage within the breakwater enclosure on the west side of the harbor entrance, on account of the ore strike, and several of them have grounded in attempting to make this harbor of refuge. It has been claimed that the boats rested on the wreck of the barge Wahnapitae, which went down between the west pier and the eastern extremity of the western breakwater, and that the remnants of the wreck should be cleared by Wrecker Reed, who purchased the sunken barge, but the vessel captains, whose boats have been on the bottom, are positive that northeasterly and easterly winds have filled up this entrance to the breakwater enclosure and the channel should be dredged out. The danger from this source to deep laden vessels attempting to make the harbor of refuge in heavy weather is very great and something should be done toward removing the bar that has formed at the entrance. As the soil within the eastern breakwater enclosure does not well admit of anchorage, it is absolutely necessary that the western harbor should be kept clear.

Washington Counsellors.

In another part of this journal Conger & Conger, attorneys and counsellors at law, No. 45 Corcoran building, Washington, D. C., solicit the patronage of the marine and shipping interests of the country especially in matters coming before congress and the treasury department. The practical connection of this firm with the maritime interests of the great lakes as counsel in Washington for the Lake Carriers' Association, and as counsel for the Chicago Vessel Owners' Association and others interested in the very important question just decided by the attorney general touching the Chicago bridge matter, is sufficient recommendation. Hon. O. D. Conger, during eighteen years of service in congress was at all times a champion of the interests of the lake region and served for sixteen years on the committee on commerce of both houses.

World's Fair Mines and Mining Building.

The King Iron Bridge and Manufacturing Company of Cleveland has been awarded the contract for the first of the eleven large buildings for the Columbian exposition. The building will be designated as the mines and mining building, and will be composed almost entirely of steel and glass. It will cover an area of 245,000 square feet and from the ground to the apex of the roof will be 100 feet. The contract calls for the completion of metal work Oct. 1, 1891.

Notices to Mariners.

The light-house board gives notice that on or about June 15, the fixed white light shown from the rear tower at the mouth of Saginaw river, Mich., will be changed to fixed red, forming with the front light a range, consisting of two fixed red lights, for entering Saginaw river. The order of the light will not be changed. The same date the tower of the front light will be painted red, forming with the yellow tower of the rear light a day range for entering the river.

Masters navigating Lake Erie, and especially those going to Buffalo, would do well to look out for the wreck of the schooner Fayette Brown, sunk in collision last week. She lies in 9 fathoms of water about nine miles east-north-east of the Dummy light. Her spars are above water.

Water Tube Marine Boiler.

(Illustrated on page 1)

The efficiency of the Babcock and Wilcox stationary water-tube boiler and their employment in so many of the steam plants of the country is so marked that the announcement that they were experimenting with a type of their boiler for marine purposes was received with interest by shipbuilders, who have been ready at all times to adopt a boiler that would give more than 160 pounds pressure without losing what was gained in being too heavy or bulky. The first boilers of this class have been built at Glasgow and one is now at the Royal Naval Exposition, Chelsea. They will be introduced in this country very soon. The chief improvement over their land boiler is in the adoption of smaller tubes and the use of verticle tubes in place of brick work. The heating tubes are expanded at the ends into headers of wrought steel, the rear headers being connected to the steam and water drum by short vertical tubes. Above the water box is a feed water heater, somewhat similar to the boiler proper.

The feed is introduced at the bottom of the feed-water heater, and after passing through the tubes of the latter it leaves it at the top, and passing through a combined stop and check valve enters the boiler proper at the center of the steam and water or main drum. From thence the water descends through the short straight tubes to the rear headers, and then ascends through the inclined tubes into the frout headers. Through the latter it rises into the horizontal water-box, and again finds its way into the main drum and horizontal tubes as shown. The furnace, as will be seen, is immediately under the inclined tubes. The gases ascend around and amongst these tubes, and then pass through the feed-water heater to the chimney. In this way the advantage is obtained of the gases passing at right angles to the axis of the tubes, so that they are in the most favorable position to impart their heat to the water. The furthur advantage is secured of the hottest gases being brought in contact with the water in the boiler proper, which is at the highest temperature, whilst the parially spent gases have their remaining heat abstracted by the cooler feed of the heater. The circulation of water in the vertical water tubes at the side is practically independent of that in the inclined tube. One of the boilers with grate surface 6 feet 2 inches by 6 feet 8 inches was tried for five hours, but on account of gauge glasses breaking the pressure was necessarily kept at 150 pounds. About 4,500 tons fuel was fired and 7,498.4 pounds of water per hour was evaporated. Temperature of flue gases was from 560 to 670 degrees. Write the Babcock & Wilcox Company, New York, for particulars.

Work of the Ship Yards.

No new work of any kind is offered to the shipbuilders and as it is not probable that any boats will be built for the purpose of selling them, it may be expected that several of the companies will follow the example of the Chicago Ship Building Company and close their plants, practically, retaining only enough men to care for repair work and other unimportant jobs outside of the regular line. The only contract now in sight is one to come from the government for a small vessel to be used by the revenue marine service for boarding purposes at Chicago. The vessel will be of steel but will measure only 170 tons, the plans calling for a boat 94 feet long, 20.6 feet beam and 11 feet depth of hold The treasury department has only $28,000 for the building of the boat.

On account of the Schlesinger mining difficulties, Capt. James Davidson's four big wooden boats are still on his hands and nothing is being done with them. The Wolf & Davidson interests of Milwaukee are in a similar fix regarding an ore transportation contract, part of which was carried over to the present season. Whether these matters will result in litigation or not is still a question. The Menominee Transit Company, which succeeded in straightening out matters pertaining to the steel boats contracted for by Schlesinger, was fortified by a contract with the Chapin Mining Company but it is thought probable that Capt. Davidson was not so fortunate in his transaction.

The new steamer being built at South Haven for Messrs. Perue, Marshall & Wilce, will be launched shortly. She will carry 400 tons and will go in the lumber trade, towing the schooner Charlie Marshall.

The big steel tug which the Union Dry Dock Company, of Buffalo, is building for service in New York harbor is nearing completion.

Wrecks and Heavy Losses.

The stranding of the propeller Badger State at Erie, as a result of which Capt. Clark of the Erie life saving crew lost his life, was a sad affair and has ended in a great deal of ill feeling being stirred up in several directions. The reports sent out from Erie about Capt. Dobbins, of the life saving service, demanding an investigation into the conduct of Capt. Smith, of the Badger State and making a general fuss about the qualities of the life boat while the steamer was still ashore, caused considerable unfavorable comment here. The life boat capsized and Keeper Clark, who was a good officer, was drowned. It was claimed that the officers of the Badger State made no effort to assist the struggling life savers but this is denied. Failure on the part of the crew to put on life jackets and the captain's neglect to fasten down the shutters that close the end air cases of the boat are said to have resulted in the captain's death. An investigation has been made by Lieut. Thomas Walker, inspector of the service who was sent on to Erie from Washington. His report has not yet been made public. Andrew Johnson, an experienced surf-man, who was engaged in the service at Erie for a number of years, has been given charge of the station. The Badger State was put to considerable expense and some loss in cargo but was not seriously injured.

Reports of the sinking of the schooner Fayette Brown on Lake Erie were also accompanied by newspaper statements detrimental to one of the captains. Capt. Smith, of the Northern Queen, the boat that ran down the Brown near the Dummy, Lake Erie, did all in his power to render assistance to the crew, who were afterward taken from the rigging of the sunken boat by the propeller Mills. This is shown by the statements of both masters but there is little from Capt. Smith to show how the collision occured. He has simply said that when he first saw the Brown she was signaling to pass him in a way that he knew she could not possibly do, so he stopped at once and when he struck her he was hardly moving. Capt. Ahlstrom, of the Brown, says that while beating down the lake he heard for some little time the whistles of two steamers, and had his own fog horn blowing. He was on the port tack, standing to the south-'ard, when suddenly the Northern Queen loomed up through the mist. It is claimed that the steamer's wheel was first put to starboard and then to port, when after five minutes of suspense she struck the Brown's port quarter. If this version of the accident is correct the steamer should have ported and backed.

The propeller Bay City, lumber carrier owned by John F. Rust, of Cleveland, burned to the water's edge at Detroit. Value of boat $10,000. Only about one-third of a cargo of 300,000 feet of lumber was saved.—Damages on the propeller Presley, ashore near Sand Beach from Thursday until Monday will be heavy. Insurance on the boat amounted to $30,000. Interests of Messrs. Presley and Cole were not insured. About 200 tons of her cargo of coal was lightered and 300 tons jettisoned.—Schooner Queen City, bound for Milwaukee with coal, ran on Point au Pelee middleground and is now in dry dock at Detroit after lightering half her cargo.—Insurance companies and Capt. C. H. Weeks, former owner of the barge John Sherman, have decided to lay her up It was found that the cost of repairing her damages caused by collision with one of the steamers of the Wilson line, would be $6,753. She will probably never be rebuilt.—Schooner Topsy, owned by C. O. Barker, of Chicago, broke in two at anchor off Beaver island, Wednesday, and is a total loss. She was loaded with cedar and was valued at $1,500. No insurance.—One of Grummond's tugs will resume operations on the schooner Monterey, beached last fall on the east shore of Lake Michigan.

The Southern Pacific Company has ordered a set of Serve's ribbed boiler tubes for delivery at New Orleans. If boiler makers and steamship owners would stop to think for a moment that the saving in fuel would more than pay for the cost of the ribbed tubes within a year, they would no doubt make the investment. If the fuel bill can be reduced 25 per cent. isn't this new tube worth looking into? Write the MARINE REVIEW for a statement of the comparative test of plain and ribbed tubes.

UNITED STATES ENGINEER OFFICE, Grand Rapids, Mich., May 28, 1891.—Notice is hereby given that on Monday, June 15, 1891, at 2 o'clock in the afternoon, there will be sold at PUBLIC AUCTION, to the highest bidder, for cash, at the "Hotel Benton," Benton Harbor, Mich., the OLD HULL OF THE UNITED STATES TUG "GENERAL GRAHAM," now lying at Allmindinger's shipyard at Benton Harbor, Mich. WILLIAM LUDLOW, Major Corps of Engineers, Bvt. Lieut. Col. U. S. A.

Around the Lakes.

Mayor Washburne of Chicago promises police protection in future to non-union crews on vessels entering that port.

Captain John Sterling, lately in command of the barge Bay City, which burned in Detroit, will sail the propeller Alpena.

Capt. William Fletcher, long in the Union Line of Buffalo, has been appointed pilot of the revenue steamer Commodore Perry.

The propeller B. W. Blanchard is a fourth abdition to the Eber Ward line of steamers, running between Ogdensburg and Duluth.

The lake lines will make an effort to secure docks at the World's Fair in order that freight can be loaded directly on the grounds from steamers.

The Welland canal is now open for the locking of boats until 6 o'clock Sunday morning and after 9 o'clock Sunday evenings, the same as last season.

The work of the contractor who removed the wrecks of the schooners Tremble and Ben Hur from the St. Clair river at Port Huron has been accepted by the government.

Cheboygan's shipments of lumber show a big increase of late. During May 22,000,000 feet of lumber, 3,000,000 lath, 74,000 railroad ties and 35,000 posts were shipped from that port.

It is reported that the steamer A. P. Wright left Buffalo Monday with 2,300 tons of coal and 200 tons of fuel in exactly 34¾ hours after she reached the Wick dock with 2,200 tons of iron ore.

Adolph Westberg, a sailor on the schooner Kate Winslow, was lost overboard on Green bay, Thursday, and Alexander Simpson, mate of the schooner H. B. Moore, met the same fate on Lake Michigan.

Charles W. Wetmore, prominent young attorney of New York and secretary of the American Steel Barge Company, for whom one of the steam barges was named recently, is a son of F. P. Wetmore, of Marquette

The Penberthy Injector Company of Detroit has within the past four years placed 40,000 of its injectors on the American market and 8,000 on the Canadian market The injector is now meeting with a big sale in England.

The Chicago Dry Dock Company is negotiating for a sale of its property. The purchasing party proposes to fill in the dock and erect a building on the side. It is understood that the dry dock company demands $100,000 for its property.

Hackley & Hume of Muskegon owners of the missing Lake Michigan schooner Thomas Hume, hold to the belief that she was run down and advertise a reward of $300 for information of the disaster, guaranteeing secrecy if necessary.

Chicago is increasing its fleet of excursion steamers in anticipation of the World's Fair boom. The Chicago Excursion Company has contracted with Capt. Richard Armstrong of Bay City, owner of the Sailor Boy, to run his boat during the remainder of the season from a central point on the river to Jackson park.

The H. M. Loud & Sons Salt and Lumber Company of Au Sable wanted to give the name City of Au Sable to the steambarge recently constructed by them from the hull of the schooner Wyoming, and had the new name painted on the bows, but they found that it will be necessary to present some important data to the treasury department before the change can be made.

Officers of the life saving service propose to erect costly buildings at Jackson Park, Chicago, with a view of giving practical illustrations at the World's Fair of the workings of the life saving service. The buildings will be permanent, as they can be used for regular service on Lake Michigan after the fair is at an end. They will be equipped better than anything of the kind in the world.

Recent purchases of wheat by A. D. Thomson, of Duluth for shipment from West Superior to the seaboard, amount to 3,500,000 bushels The whalebacks will probably carry most of this grain, as Mr. Thomson is a director in the barge company. It is said, however, that the wheat is Great Northern wheat, and this would seem probable as some of it has been taken for through shipment.

Capt. McLachlan, of the big steamer City of Cleveland, of the Detroit and Cleveland Steam Navigation Company, is the latest to complain of the neglect of the Canadian light-keeper at the dummy, Point au Pelee, Lake Erie, to blow the fog whistle. He says that his boat was compelled to lie at anchor on the night of the 2nd inst. on account of this neglect and the statement is verified by other masters who were also held by the thick weather.

The steamships of the Great Northern Railway Company are doing a wonderful business between West Superior and Buffalo. Last month's movement of freight from West Superior exceeded that of April and May in 1890. Shipments of flour for May this season were 329,374 barrels, copper matte 2,830 tons, grain 1,000,000 bushels, oil-cake 400 tons. In addition to the coal receipts of 25,000 tons, 7,000 tons of general merchandise were received.

Capt. Weeks arrived in Cleveland, Monday, with his handsome yacht Julia, the boat that won so many prizes in the East New York club races. He brought her through the Erie canal and ran from Buffalo to Erie in the heavy storm that sent the Badger State ashore. He put in there to wait for his small boat to come ashore. Yachtmen are invited to inspect the Julia any time after Monday, and see if the claim of her being the finest yacht on the lakes is correct.

The danger of an accident to the Sault canal lock through mistakes on the part of officers of vessels is a constant source of anxiety to everybody interested in that important waterway, especially while the work on the new lock is under way. Through a misunderstanding of signals between master and engineer on the propeller Gratwick a few days ago the boat was jammed into the lower gate. Although the material for a new gate is in readiness at the Sault, it would take some time to repair such an accident.

The Chicago Trades Assembly estimates that 150,000 people, men and their families, secure a living through working in Chicogo harbor during the season of navigation. The secretary of the board of trade says in his annual report just issued: "The magnitude of this lake commerce at the end of another decade will be beyond the most sanguine expectations. As bearing upon this prospect, look for a moment at the past with reference to the growth of the lake cities. Buffalo has increased in population from 42,000 in 1850 to 255,000 in 1891, Cleveland from 17,000 in 1860 to 262,000 in 1891, and Chicago from 30,000 in 1850 to 1,100,000 in 1891."

Cleveland Matters.

The schooner Constitution, which ran into the Detroit river light station on her last trip up in tow of the propeller Oscoda, will in all probability have to pay for the damage done to the stone work and pier railing. In 1886 the schooner Blake ran into and demolished a portion of the stone work of the same station. She paid for the damage last year after the matter had been decided by the United States court.

Capt. J. A. Moffatt is now in command of the excursion steamer Ossifrage, running between Cleveland and Lake Erie islands.

The propeller William Edwards will receive at the expense of the steamer Sachem some repairs to her stern while her engines are being compounded at the yard of the Cleveland Ship Building Company. She will also get a new boiler 11 feet in diameter by 16 feet long.

R. Newell and J. D. Lillibribge, connected with the offices of Corrigan, Ives & Co., and the Inter-State Transit Company, will also engage in vessel brokerage business in Cleveland.

Secretary Cold, of the Ship Owners' Dry Dock Company, says the second dock now on the way to completion will be ready for service in August. With the completion of this dock the Ship Owners' company will have the largest and best docks on the lakes. It is not expected that the extensive dock improvements being made by the Detroit Dry Dock Company, which are equally important, will be finished much before the close of navigation.

Affairs in Admiralty.

The decision by the court of appeals of the state of New York in the case of Rhodes against Newhall is of importance to vessel owners and grain handlers. In the fall of 1889 the steamer R. R. Rhodes was short 820 bushels on a cargo of wheat from Duluth, delivered at Buffalo to D. E. Newhall. The steamer was charged with shortage, and her owners sought to recover the value of the grain. Suit was brought before the superior court, which resulted in a verdict for the defendant. Carried into the supreme court this verdict was affirmed. The owners of the Rhodes wanted to see the thing through, so they went before the court of appeals. Now the highest court in the state has affirmed the verdict also, thus deciding that a vessel cannot recover for a grain shortage. Lower courts have decided this vexing question for years, but this is said to be the first time a court of appeals has disposed of it.

Judge Jenkins of the United States district court at Milwaukee, decided the Roanoke insurance case in favor of the libelants and against the owners of the boat. On May 17, 1890, a fire occurred in the hold of the Roanoke while lying in port at Buffalo. The underwriters paid the losses, claiming that they were general average charges and sued the owners of the boat for their contribution, $25,015.25. The court held that the conditions justified a general average adjustment.

Henry Chaffee was employed at Kenosha, August, 1889, on the schooner H. H. Badger, owned by the T. W. Harvey Lumber Company of Chicago, and was injured by the boat's capstan becoming loosened. He sued for $7,000 damages but Judge Gresham, of Chicago, decided against him, as it was shown the Badger's capstan was fastened in the usual way on lake vessels of her size.

Two of the most interesting admiralty cases that the lakes have seen in many years will be heard during the present month. United States District Judge Jenkins is expected to take up the famous Armour-Marion collision case June 30, at Milwaukee, and the United States circuit court at Cincinnati will give the North Star-Sheffield case a hearing next week.

Package Freight Handling at Buffalo.

There is probably no port in the world where package freight is taken from holds of steamers and placed in warehouses or on docks with the same dispatch as given at Buffalo. The package freight to and from the steamers of the Northern, Union, Lehigh, Lackawanna, Green Bay, old and new Ward, and Cleveland and Buffalo lines is handled under contract by W. J. Conners, who employs between 400 and 500 expert dock men. They are paid by the ton and average $600 per season. This great dispatch is due to the excellent working system he has organized. The freight handled consists of general merchandise in packages six inches to six feet square and from one to one thousand pounds. On May 19 there were 1,750 tons of this freight put into the Chemung in less than 9 hours, and on May 26 the New York was loaded with 1,900 tons in the same time. These instances are not unusual and the same dispatch is given all the line boats that have their cargo department work done by contract April 28 the Russia of the Lackawanna line was relieved of 1,700 tons of cargo in eight hours and twenty minutes, from three hatches. Where the freight is all of one class the time made is astonishing. The Senaca with 900 tons of flour on April 29 was cleared in two hours and fifty-five minutes, and on May 4 the Lackawanna had 2,025 tons of flour taken out in eight hours. When 200 pound packages are taken from the hold of a vessel and placed in warehouses at the rate of more than one per second for nearly nine hours, without damaging one package, it is hard to imagine any improvement. This was done in the case of the Northern King on May 14, when she had a cargo 2,342 tons of flour in 25,000 sacks and 8,900 barrels, which was unloaded in eight hours and fifty minutes. Again on May 16 the North Star's cargo of 2,204 tons, made up of 15,600 barrels and 52,625 sacks of flour and 3,784 sacks of copper matte was discharged in seven hours.

David Joy, the designer of the Joy valve gear, has invented an attachment to large slide valves which he calls an assistant cylinder. It is simply a cylinder on top of the steam chest, the tail end of the main valve stem being fitted with a piston which works in the small cylinder. This piston acts as its own valve, through ports in it, and gets steam on top and bottom alternately, thus doing a large portion of the work of moving the valve and relieving the eccentrics and links materially.

The illustration of the quadruple engines in the last issue of the REVIEW should have been credited to the Engineer, New York. That paper has such a large circulation on the lakes, however, that this correction is almost unnecessary.

"THE MICHIGAN"

ISSUES POLICIES ON HULLS AND CARGOES ON FAVORABLE TERMS. IT IS FOR THE INTEREST OF THE OWNERS OF THE LAKE MARINE TO BUILD UP A HOME COMPANY BY THEIR PATRONAGE.

AGENCIES AT PRINCIPAL PORTS.

Commercial Union Assurance Company, Limited,
OF LONDON.
INLAND MARINE DEPARTMENT.

DAVID VANCE & CO.,
General Agents,
MILWAUKEE, WIS.

INSURES HULLS, CARGOES and FREIGHT.

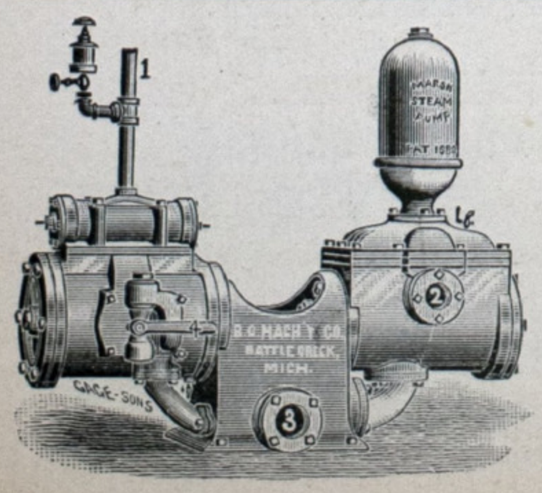
Local Agents at all Lake Ports.

Insurance Company of North America.
INCORPORATED 1794.

LAKE MARINE DEPARTMENT,
GEO. L. McCURDY, Manager, Chicago, Ills.

CHARLES PLATT, President. WILLIAM A. PLATT, Vice-President.
EUGENE L. ELLISON, 2d Vice-Pres't. GREVILLE E. FRYER, Sec'y & Treas.
JOHN H. ATWOOD, Assistant Secretary.

Capital, paid up in cash $3,000,000 00
Assets 8,951,518.83



MARSH STEAM PUMP,

Absolute Actuation and Regulation Without Use of Tappets, Levers or other Mechanical Connections.

FOR MARINE AND STATIONARY BOILERS.

Smaller Sizes With or Without Hand Pumping Attachment.

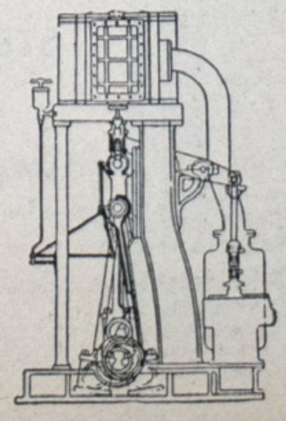
Exhaust Returned to Boiler. Heats Feed Water Forty to Fifty Degrees, according to tests made by Prof. M. E. Cooley, of the University of Michigan. Steam Valves Actuated by Direct Boiler Pressure.

Has Fewer Wearing Parts than ANY OTHER Steam Pump.

For Circulars and Prices, address

STRONG, CARLISLE & TURNEY, Cleveland, O. STANNARD & DILLON, Chicago, Ill.
DETROIT SHEET METAL & BRASS WORKS, Detroit, Mich. H. P. TOBEY, Toledo, O.
or BATTLE CREEK MACHINERY CO., Manufacturers, Battle Creek, Mich.

THE O'CONNELL GREASER,



Used on an aggregate of 4,000 horse-power of Marine Engines.

RESULTS:

Sure control of Crank Pin.

Stoppage of Lard Oil account.

Perfectly clean Engine

O'Connell & Cahill,
Manistee, Mich.

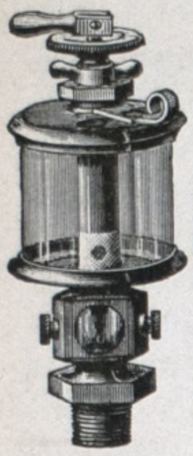
Dark lines indicate apparatus.

E. L. PARRISH & CO.,

SHIP CHANDLERS, SAIL, AWNING and RIGGING LOFT. 11-13 Main Street, BUFFALO, N. Y.

Boston and Lockport Block Co.'s Patent 5-Roller Bushed Blocks. Telephone 314. **SEWELL & DAY'S BOSTON ROPE.**

Powell's Signal Oilers.



INCOMPARABLE FOR ENGINES AND DYNAMOS.

Convenient to fill.

Easy to regulate.

Flow of oil can be instantly shut off by simply moving the lever down—**without disturbing the adjustment.**

Also made Double and Triple Sight feed for Marine Engines.

Your dealer can supply you. Manufactured by

The Wm. Powell Co.,
CINCINNATI, O.

ENGINEERS ONCE USING "SINCLAIR" BRAND KEEP TO IT

PURE LARD OIL ONLY

SEND FOR FREE SAMPLE TO THE MANUFACTURERS, WHO GUARANTEE ITS ABSOLUTE PURITY.

T. M. SINCLAIR & CO.,
CEDAR RAPIDS, IOWA.

VESSEL AND MACHINERY EXCHANGE.

Space under this heading may be used gratis by our advertisers or subscribers to call attention to vessels or any craft, machinery, new or second hand, that they may have for sale. Those wanting machinery of any kind, or wishing to purchase vessels, are invited to take advantage of the same offer. Each item will be limited to three lines. Letters concerning same must mention number attached to item and be addressed MARINE REVIEW, 510 Perry-Payne Building, Cleveland, O.

61—Fish tug for sale—62 feet long, 14 feet beam and 7 feet 6 inches deep.

62—WANTED—To trade valuable real estate for insurable vessel that will carry 500 to 800 thousand feet of lumber, steambarge preferred. D. J. Ranson, Sault Ste. Marie, Mich.

58—Crosby Indicator, used only four times, for sale cheap.

1867. **PERFECT SATISFACTION GUARANTEED.** 1891.

A. G. HARBAUGH & CO.,

34 & 36 River Street, CLEVELAND, O.

Manufacturers of Strictly Pure and Acidless Lard Oils, specially adapted for Steamboat use.

Will furnish Brand free for Ship Chandlers or other dealers who desire their name and address on packages.

WRECKING AND TOWING COMPANIES.

I. H. OWEN, PRESIDENT, Chicago. F. H. VAN CLEVE, SEC. Escanaba. CAPT. GEO. BARTLEY, SUPT. Escanaba.

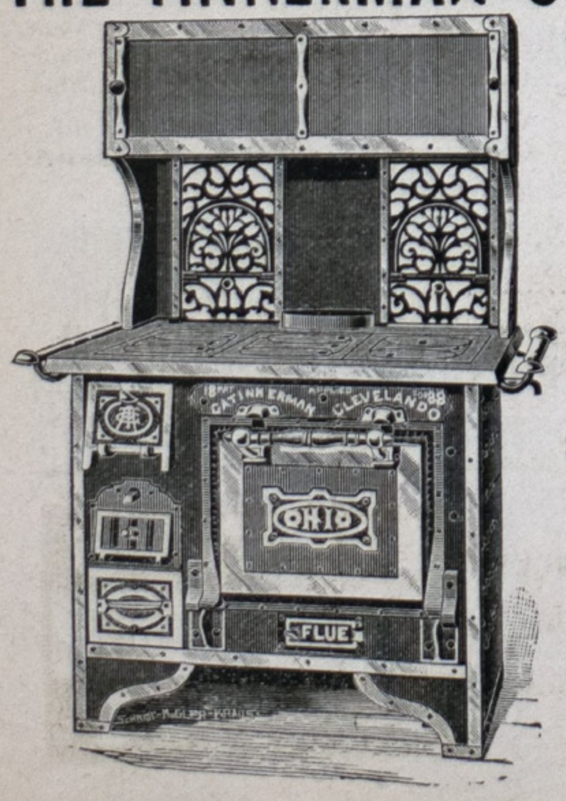
ESCANABA TOWING & WRECKING CO., Escanaba, Mich.

Tugs, Lighters, Steam Pumps, Hawsers, Hydraulic Jacks and Diving Appliances always ready.

TUG MONARCH, } Engine Compound, Cylinder 16 and 30 inches diameter, 30 inch. Stroke, Steam Pressure Allowed, 125 pounds.
TUG DELTA, } Cylinder 20 by 22, Steam Pressure Allowed, 105 pounds.
TUG OWEN, } Cylinder 20 by 24, Steam Pressure Allowed, 104 pounds.

CENTRIFUGAL PUMPS, Seven and Fourteen Inch Suction.

THE TINNERMAN STEEL RANGE CO.



797, 799, 801 & 803 Lorain, Cor. Fulton St.,

CLEVELAND, O.

—MANUFACTURERS OF—

THE OHIO WROUGHT STEEL RANGES

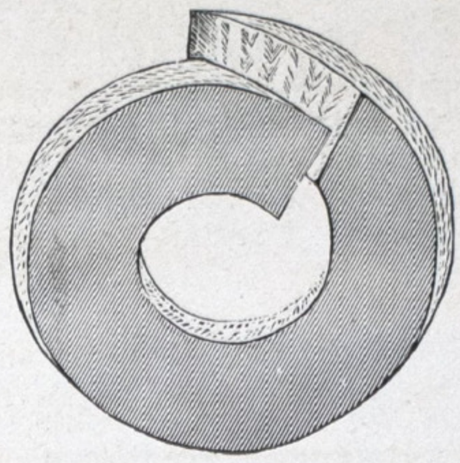
—FOR—

STEAMBOATS, HOTELS and FAMILY USE.

Owners and Masters, buy a Range by all means.

Buy an OHIO WROUGHT STEEL RANGE with Moderate Means.

GOULD'S STEAM AND WATER PACKING.



TRADE-MARK.

Pat'd June 1, 1880—The Original Ring Packing.

For Piston Rods, Valve Stem of Steam Engines, Steam Pumps, and especially adapted for Marine Engines and Electric Light Plants.

☞In ordering, give **exact** diameter of Stuffing Box and Piston Rod or Valve Stem.

Self-Lubricating, Steam and Water Tight.

Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. **Every Package Fully Warranted.**

N.B.—This packing will be sent to any address, and, if not satisfactory after a trial of 30 days, can be returned at our expense. None genuine without this trade-mark and date of patent, stamped on wrapper. **All similar Packages are Imitations, and calculated to deceive.**

THE GOULD PACKING COMPANY,
ALBION CHIPMAN, Treasurer, East Cambridge, Mass.

NEWLY FINISHED, FINE MODEL, FAST TUG FOR SALE.

Dimensions, 76 feet long, 15½ feet beam, 7 feet deep, with an engine 18 x 20; steam supplied by steel boiler 6 ft. 8 by 10 ft. 8.

D. BELL ENGINE WORKS. *BUFFALO, N.Y.*

F. A. FORCIER. M. L. WEIL

The Champion of all Fire Extinguishers!

Just the Thing that is Wanted on Every Vessel!

CLEVELAND, O., Sept. 19, 1890.

Black Cloud Chemical Fire Extinguisher Co.:

GENTS: It affords me great pleasure to testify of the great work your extinguisher does. I have four of them on board and for their simplicity of handling, as well as quickness of extinguishing a fire, they have no equal. Yours truly, CAPT. H. H. HICKMOTT, Schooner E. B. Palmer.

BLACK CLOUD CHEMICAL FIRE EXTINGUISHER CO.
26-30 E. Main Street. CLEVELAND, OHIO.
Office, 31 Atwater Building.

TRAVELERS' REGISTER.

Standard time, given here, is 33 minutes slower than City time.

THE NEW YORK, CHICAGO & ST. LOUIS R. R.

	Arrive East.	Depart East.
Buffalo Passenger	10 40 AM	10 45 AM
Chicago Passenger	9 20 PM	.....
WESTWARD.	Arrive.	Depart.
Chicago Passenger	.....	6 30 AM
Fostoria Passenger	5 06 PM	5 11 PM

All trains daily except Sunday.

ERIE RAILWAY.

	Arrive.	Depart.
Youngstown Accommodation	*7 15 AM	†6 00 AM
New York and Pittsburg Express	†5 15 AM	*8 10 AM
Pittsburg Accommodation	*12 30 PM	*11 25 AM
New York & Pittsburgh Limited	*9 55 AM	*2 55 PM
Mantua Accommodation	*7 20 PM	*4 20 PM
Youngstown Express	†9 10 PM	†6 00 PM
New York & Pittsburgh Express	*6 50 PM	*11 00 PM

* Daily. † Daily except Sunday.

This is the only route by which passengers can reach Corry, Elmira, Binghampton and New York City without change.

The short and direct route to Pittsburg, Washington and Baltimore. Only 4½ hours to Pittsburg; four trains daily.

For tickets, sleeping car space and further information address City Passenger Agent, 141 Superior St., (Weddell House block,) or Central Passenger Station, South Water Street.

A. M. TUCKER, Gen'l Manager, Cleveland, O.
G. E. FOUTS, C. P. and T. A., Cleveland, O.
W. C. RINEARSON, Gen. Pass. Agt., New York.

Duluth, South Shore & Atlantic Railway,

OVER 100 MILES SHORTER than any other line between And Principal New England and Canadian Points and **BOSTON, MONTREAL,** the great Northwest.

THE ONLY LINE TO ST. PAUL AND MINNEAPOLIS, VIA DULUTH.

The New Short Line from principal points in Michigan to DULUTH, PACIFIC COAST and intermediate sections. RATES ALWAYS THE LOWEST.

New and elegant Wagner Vestibule Buffet Sleeping Cars on through trains. For time tables, tickets and general information call on nearest ticket agent or write to

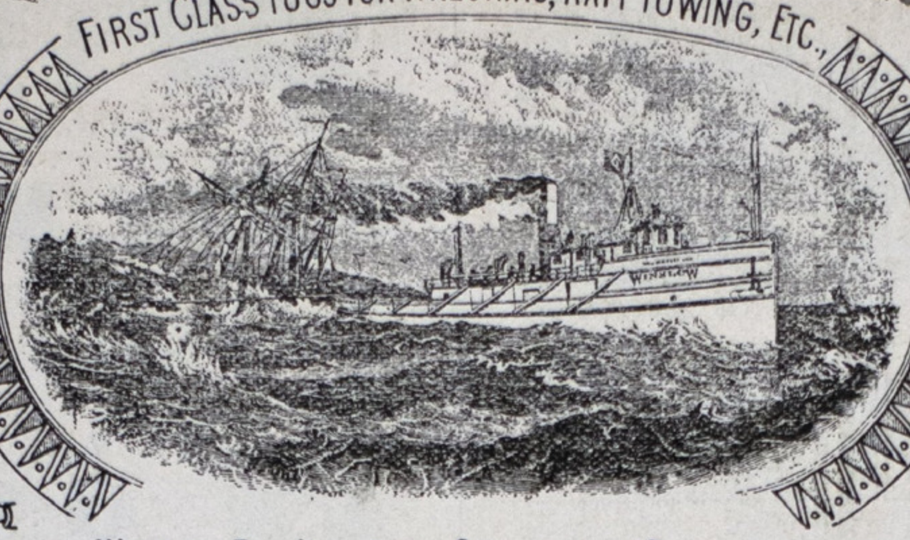
C. P. FLATLEY, Genl. Western Agt., 291 Jackson Street, ST. PAUL, MINN.
V. DEARING, District Pass. Agt., 202 Main Street, JACKSON, MICH.
T. H. LARKE, Commercial Agt., 327 Superior St., DULUTH.
W. F. FITCH, Genl. Manager, MARQUETTE, MICH.
C. B. HIBBARD, Genl. Pass. & Tkt. Agent.

S. B. GRUMOND,

OWNER OF TUGS

WINSLOW,
LEVIATHAN,
SWEEPSTAKES,
CRUSADER, M. SWAIN,
CHAMPION, JOHN OWEN,
WM. A. MOORE &
OSWEGO.

FIRST CLASS TUGS FOR WRECKING, RAFT TOWING, ETC.,

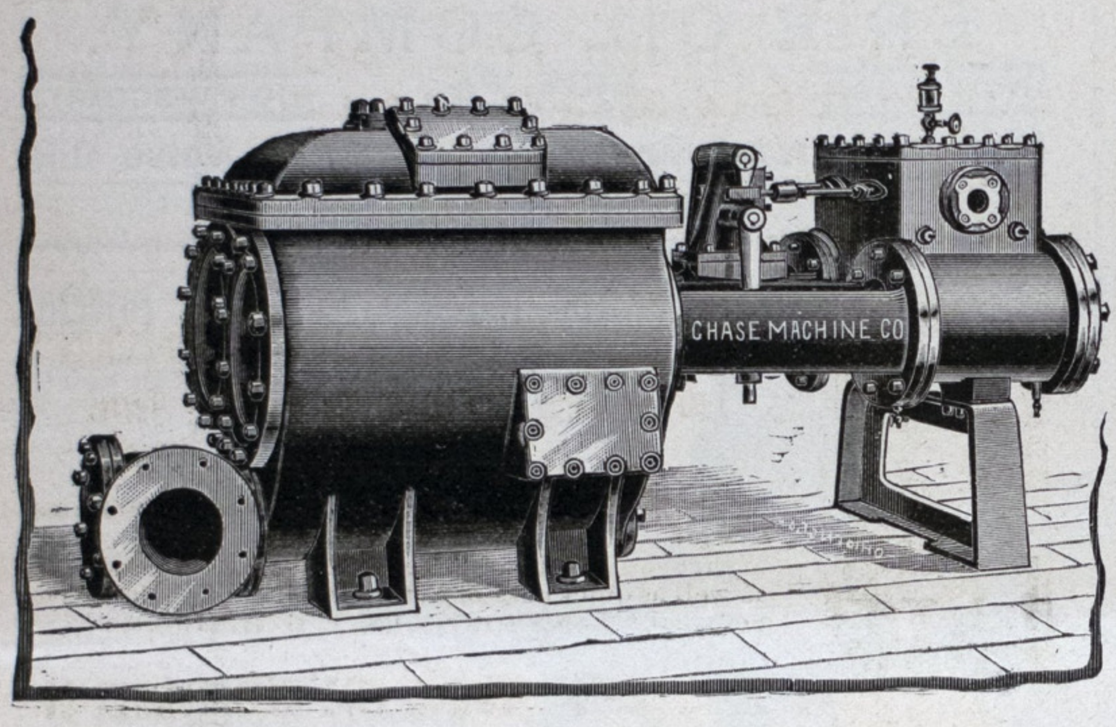


EIGHTEEN STEAM PUMPS, ROTARY WORTHINGTON & CENTRIFUGAL HYDRAULIC JACKS. SUB MARINE DIVERS, HAWSERS, LIGHTERS &C. WAREHOUSE & OFFICE ON DOCK, FOOT OF FIRST ST.

OFFICE OPEN DAY & NIGHT
SATISFACTION GUARANTEED.
DETROIT, MICH.

BRANCH OFFICES AT PORT HURON, & CHEBOYGAN MICH

WRECKING TUG LEVIATHAN STATIONED AT CHEBOYGAN
WITH PLENTY OF WRECKING MATERIAL ON BOARD AND IN WAREHOUSE.



THE CHASE MACHINE CO.,

111 Elm St., CLEVELAND, O.,

Machinists and Engineers,

MANUFACTURERS OF

Land and Marine Engines and Steam Pumps,

Sole Owners and Manufacturers of the

CHASE FOG WHISTLE MACHINE.

Special Attention given to Marine Repair Work.

ENGINEERS' SUPPLIES. ASBESTOS PIPE and BOILER COVERING.

Agents for the J. L. Rubber Valves, and Leonard & Ellis' Valvoline.

Telephone 994.

McBEAN, EDGE & CO.,

Steamboat Sheet Iron, Tin and Copper Workers,

— MANUFACTURERS OF —

SIGNAL

LAMPS

With patent lenses, fluted or corrugated, with corrugations inside or out.

STEEL RANGES for Steamboats and Hotels.

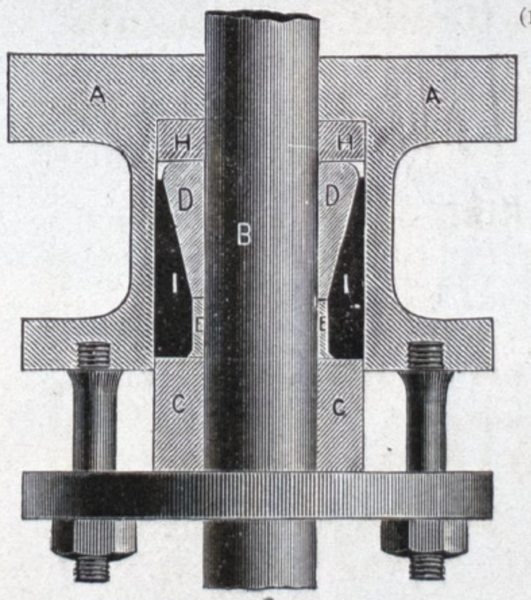
HEAD LIGHTS, ENGINEERS' SUPPLIES,

Anchor and Binnacle Lamps; Square, Triangle and Canalboat Head-Lights; Torches, Coal Oil Lamps, Lanterns, Chimneys, Wicks, &c.

Telephone 803. 33 Main St., BUFFALO, N.Y.

The Detroit Metallic Packing,

(KILLMER'S PATENT.)

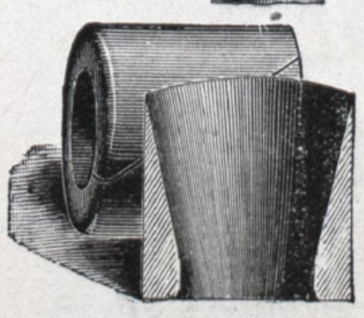


For Marine Engines, Steering Gear, Etc.

THE SIMPLEST, BEST and LEAST EXPENSIVE PACKING IN USE.

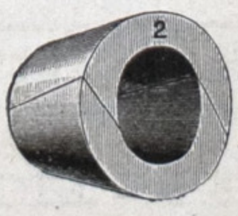
Can be applied **without disconnecting** the rod, prevents blowing or leaking of steam, cutting of rods or the blistering or rusting of rods when engine is not in use.

This packing has been in constant use on Locomotives and Marine Engines for four years without showing appreciable wear.



ELASTIC CUSHION.

If your rods are in perfect line, send us exact dimemsions for trial set.



— ADDRESS —

Detroit Lubricator Co.

DETROIT, MICH.

DIXON'S GRAPHITE PAINT

SHOULD BE USED ON ALL

Smoke-Stacks, Boiler-Fronts, Locomotive and Steamboat Stacks, Smoke Arches, Ash-Pans, Steam-Pipes and other Iron-Work.

If you have use for such an article it will pay you to send for circular and testimonials.

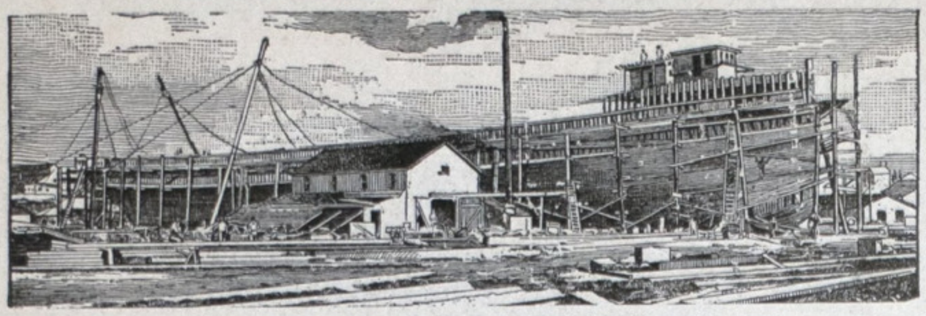
JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.

DIXON'S GRAPHITE PAINT

CON. STARKE. JOS. WOLTER. AUG. RIEBOLDT.

RIEBOLDT, WOLTER & CO.,

SHIPBUILDERS,



SHEBOYGAN, WIS.

FLOATING DRY DOCK WILL LIFT VESSELS OF 400 TONS.

H. D. ROOT, Lorain, O.

Established 1853.

SHIPBUILDING AND GENERAL REPAIRING.

TUGS AND STEAM YACHTS A SPECIALTY.

TO IRON MANUFACTURERS AND CONtractors. Office of U. S. Light-House Engineer, Ninth District, Detroit, Mich., May 19, 1891. Sealed proposals will be received at this office until 4 p.m. of Tuesday, the 16th day of June, 1891, for furnishing the materials and labor of all kinds necessary for the completion and delivery of the metal work for the Chicago Harbor Light-Station, Illinois, and for its erection at the site. Plans, specifications, forms of proposal, and other information may be obtained on application to this office. The right is reserved to reject any or all bids. WILLIAM LUDLOW, Light-House Engineer. Ju 11

PHOENIX IRON WORKS

—MANUFACTURERS OF—

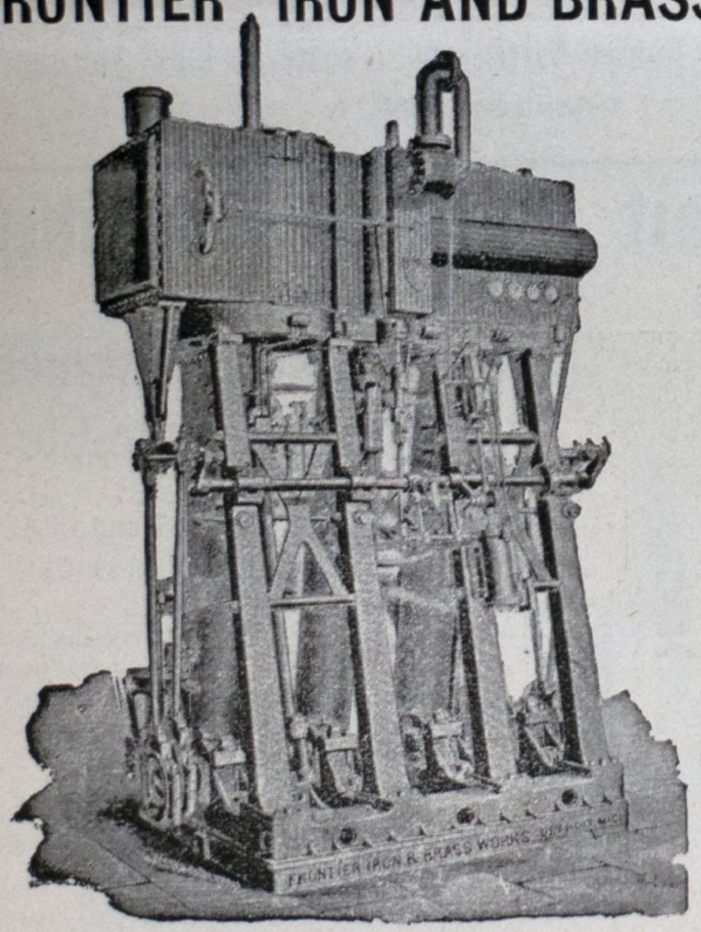
Modern Marine Engines AND Boilers

1223 to 1231 Fourth St., PORT HURON, MICH.

Telephone Nos. { Office, 15. Residence, 192.

Special Attention Given to Repairs.

FRONTIER IRON AND BRASS WORKS,



DETROIT, MICH.,

Builders of

TRIPLE EXPANSION

and all kinds of

Marine Engines

Engines furnished for Steamships:

T. W. Palmer,
Livingstone,
Majestic, Tampa,
John Mitchell,
Nyanza, Fedora,
Geo. F. Williams,
Mackinaw,
Keweenaw,
Jno. Harper,
Panther, (fore and aft compound)

and for the two counterparts of the Tampa, building at Wheeler's yard.

Fitted with "JOY" PATENT VALVE GEAR.

FARRAR & TREFTS,

Propeller, Yacht & Tug Wheels,

MARINE AND STATIONARY

ENGINES AND BOILERS.

REPAIRING PROMPTLY ATTENDED TO.

54 to 66 Perry Street, BUFFALO, N. Y.

Drilling Boilers and Engines a Specialty.

HAVE YOU HEARD OF THE

HYDRAULIC STEERING GEARS.

IT IS ASTONISHING HOW WELL AND EASY THEY DO THEIR WORK.

Manufactured by

CRAWLEY & JOHNSTON,

CORRESPONDENCE SOLICITED. **CINCINNATI, OHIO.**

Trade Mark Registered Sept. 24, '89, No. 17054

MANHATTAN SELF-LUBRICATING PACKING.

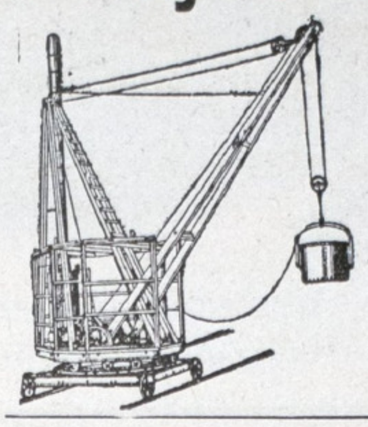
Is the BEST to be had for Steamers, Locomotives, Stationary Engines, Pumps, with oil, hot or cold water Valves, Steam Hammers, etc. It is made round and square.

Send for circulars, or sample for trial to

GREENE, TWEED & CO.,

83 Chambers Street, - New York, N. Y.

McMyler Manufacturing Co.,



180 Columbus St., Cleveland, O.

Sole Manufacturers of the

McMYLER PATENT

Revolving Steam Derrick

General Hoisting and Conveying Machinery, Ore and Coal Buckets and Dump Cars.

ERIE OIL COMPANY,

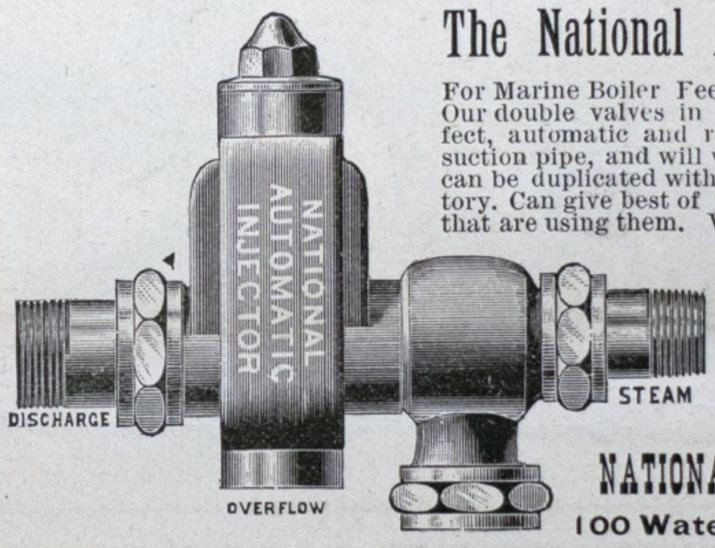
HIGH FLASH. **ERIE, PA.,** **HIGH VISCOSITY.**

MANUFACTURERS OF THE

Monarch Valve Cylinder and Engineers Valve Oils,

THE MOST PERFECT CYLINDER OILS FOR MARINE USE.
EVERY BARREL GUARANTEED.

The National Automatic Injector.



For Marine Boiler Feed it is superior to any other. Our double valves in overflow makes it most perfect, automatic and reliable; will lift with hot suction pipe, and will work water 140 hot. All parts can be duplicated without sending Injector to factory. Can give best of testimonials from engineers that are using them. Will send Injector to any reliable party on a guarantee. Give the National a trial, then decide for yourself if you want it or not. We also make the National Ejector. Send for Descriptive Price List. ☞Agents wanted in every locality. Prices always the lowest.

NATIONAL BRASS MAN'F'G CO.

100 Water St., CLEVELAND, O.

ERIE RUBBER CO.,

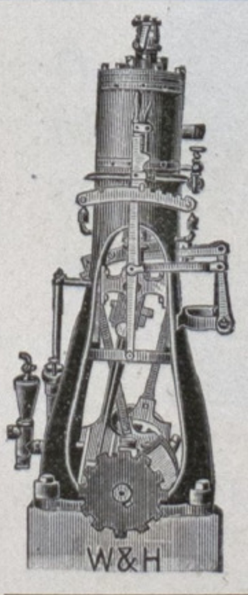
ERIE, PA.,

—MANUFACTURERS OF THE—

KEYSTONE MARINE VALVE.

These RED, AIR AND FOOT VALVES, are the Best Rubber Valves made.

J. D. WILSON. M. HENDRIE.



Montague Iron Works,

MONTAGUE, MICH.

WILSON & HENDRIE, Proprietors.

MANUFACTURERS OF

Marine Engines and Boilers,

AND GENERAL MILL MACHINERY.

HENRY B. BURGER. GEORGE B. BURGER

H. B. & G. B. BURGER,

MANITOWOC, WIS.

Ship Builders and Contractors.

Dock will admit vessels of 1200 tons and boxes will lift 350 ton vessels. Yard is fitted with a large spar derrick, and a stock of spars always on hand.